Missouri Spring Rise – Decision Framework

Hydrology/Water Quality Technical Group

Missouri River Plenary Meeting

July 26, 2005

Framework Purposes

Educate the plenary group on decisions that need to be made.

Show areas of consensus from the hydrology/water quality technical group.

Provide a tool to assist the plenary in making spring rise recommendations.

Proposal Description

a. Number of Rises

i. One/Two depending on storage conditions

- No Spring Rise below 31.0 MAF storage on March 15

- No Spring Rise above 58.5 MAF storage on March 15

ii. One only

Proposal Description

b. Flood Control Targets/Constraints

i. No changes to the flood control constraints

ii. Modify the flood control constraints by adding some or all of the spring rise magnitude during the spring rise period.

Proposal Description

c. First Rise

i. Timing

1. Begin with the start of the navigation season

2. When excess water is in the system, begin the first rise prior to the navigation season

3. Following the timing of the natural hydrograph

4. Begin when river temperature begins to rise

c. First Rise

ii. Duration and rise and fall rates

1. Rise as rapidly as possible

2. Peak, not plateau

Proposal Description

c. First Rise

iii. Magnitude

1. Prorate between lower third 50% percentile and minimum rise (22,000 cfs and 6,000 cfs)

2. Use an absolute value added on to service levels

3. Use an absolute flow cap

Proposal Description

d. Flows between rises

i. Use Master Manual curves

- Flat Release

- Flow to Target

Proposal Description

e. Second Rise

- No rise when system storage is below 31.0 MAF

- Prorate the rise between 31.0 MAF and 54.5 MAF

- Above 58.5 MAF have no rise

Proposal Description

e. Second Rise

    i. Timing

1. Based on river temperature – the second day when the river is at 16 C and/or between May 7th and 18th

2. Must consider the bird species and avoid unacceptable levels of take

3. Try to follow the timing of the historic hydrograph

e. Second Rise

ii. Duration and rise and fall rates

1. Rise as rapidly as possible

2. Peak, not plateau

3. On the fall, drop by 30% and then draw out the declining limb

Proposal Description

e. Second Rise

iii. Magnitude

1. Prorate between lower third 50% percentile and minimum rise (26,000 cfs and 10,000 cfs)

2. Use an absolute value added on to service levels

3. Use an absolute flow cap

Proposal Description

f. How to address water availability and variation for wet, normal, and dry years

- **Have no spring rise when storage is below 31.0 MAF – Extreme drought conditions**

- **Have no spring rise when storage is above 58.5 MAF – Extremely wet in evacuation mode**

Proposal Description

f. How to address water availability and variation for wet, normal, and dry years

Base spring rise values on:

- System storage

- System storage and runoff forecasts

- Use absolute values

Proposal Description

f. How to address water availability and variation for wet, normal, and dry years

Use the following date or dates to determine the spring rise values:

- March 15th

- March 15th and May 1st

g. **Volume of Water Used**

Expected to range from 0.3 MAF to 1.5 MAF

Proposal Description

h. Proposal Flexibility

- **The Corps should use all forecasting abilities to reduce flooding**

- **River temperature should be used to time the second spring rise**

- **The Corps should be able to react to unexpected events during the spring rise period**

- **As more tern and plover habitat is created, the spring rise may be shifted later in June**
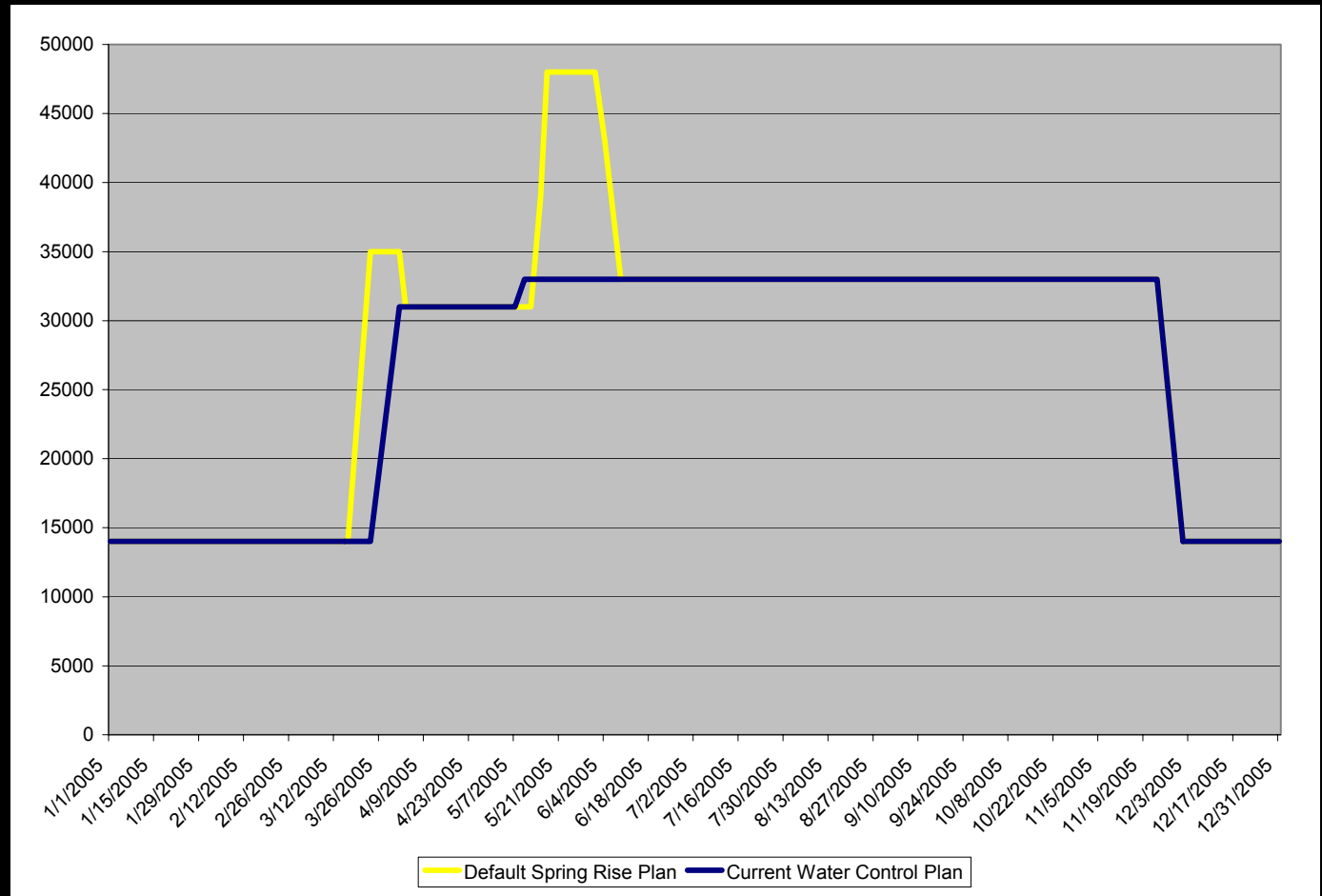
Other Framework Components

- **Release Hydrographs**

- **Rationale**

- **Anticipated Effects**

- **Monitoring Methods and Indicators**

Release Hydrograph

Decision Framework

Questions?